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EXAMINER

JONES, HUGH M

ART UNIT	PAPER NUMBER
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2128

DATE MAILED: 07/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/526,878

Applicant(s)

KAGARLIS, MARIOS

Examiner

Hugh Jones

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-48 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-48 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 March 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>30905 51205 112105</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-48 of U. S. Application 10/526,828, filed 3/9/2005, are pending.

Drawings

2. Figures 1-4 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance. See, for example, fig. 1-4, 11 of Hosoi.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. **Claim 1-42 are rejected under 35 U.S.C. 101 because the claimed invention is drawn to non-statutory subject matter since the claims are drawn to an abstract mathematical algorithm or disembodied program steps and are not tangible.**

5. The claim recites disembodied computer code (non-functional descriptive material). The code requires a computer, which has not been claimed in order for the

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code to be operable. Thus, the steps appear to be disembodied program steps and are not statutory. The claims are not concrete and tangible.

6. *The Examiner submits that the claims as written, are merely drawn to nonstatutory descriptive material since the claimed mathematical algorithm or disembodied program steps do not impart any functionality (let alone be stored on a tangible medium)). (i.e. not a computer program product or executable instructions embodied on a computer-readable medium). Analysis of the claim indicates that the claims are drawn to an abstract algorithm or disembodied computer program steps and are not tangible..*

7. *MPEP 2106 recites the following supporting rational for this reasoning:*

"Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data. **Both types of "descriptive material" are nonstatutory when claimed as descriptive material per se.** Warmerdam, 33 F.3d at 1360, 31 USPQ2d at 1759. When functional descriptive material is **recorded on some computer-readable medium** it becomes structurally and **functionally interrelated to the medium** and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized."

8. *In this case, applicants have merely claimed an abstract algorithm or disembodied program steps that are not embodied on a computer-readable medium and specifically employed as a computer component to be executed on a processor and perform the claimed limitations. Thus, Applicants have attempted to claim nonfunctional*

descriptive material.

9. An invention which is eligible for patenting under 35 U.S.C. 101 is in the useful arts when it is a machine, manufacture, process or composition of matter, which produces a concrete, tangible, and useful result. *The fundamental test for patent eligibility is thus to determine whether the claimed invention produces a “useful, concrete and tangible result.”* The test for practical application as applied by the examiner involves the determination of the following factors:

(1) Useful - The Supreme Court in *Diamond v. Diehr* requires that the examiner look at the claimed invention as a whole and compare any asserted utility with the claimed invention to determine whether the asserted utility is accomplished. Applying utility case law the examiner will note that:

(a) the utility need not be expressly recited in the claims, rather it may be inferred.

(b) if the utility is not asserted in the written description, then it must be well established.

10. Furthermore, although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

(2) Tangible - Applying *In re Warmerdam*, 33 F.3d 1354, 31 USPQ2d 1754 (Fed. Cir. 1994), the examiner will determine whether there is simply a mathematical construct claimed, such as a disembodied data structure and method of making it. If so, the claim involves no more than a manipulation of an abstract idea and therefore, is

nonstatutory under 35 U.S.C. 101. In *Warmerdam* the abstract idea of a data structure became capable of producing a useful result when it was fixed in a tangible medium which enabled its functionality to be realized.

(3) Concrete - Another consideration is whether the invention produces a concrete result. Usually, this question arises when a result cannot be assured. An appropriate rejection under 35 U.S.C. 101 should be accompanied by a lack of enablement rejection, because the invention cannot operate as intended without undue experimentation.

11. A claim that requires one or more acts to be performed defines a process. However, not all processes are statutory under 35 U.S.C. 101. *Schrader*, 22 F.3d at 296, 30 USPQ2d at 1460. To be statutory, a claimed computer-related process must either: (A) result in a physical transformation outside the computer for which a practical application in the technological arts is either disclosed in the specification or would have been known to a skilled artisan (discussed in i) below), or (B) be limited to a practical application within the technological arts (discussed in ii) below). See *Diamond v. Diehr*, 450 U.S. at 183-84, 209 USPQ at 6 (quoting *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1877)) ("A [statutory] process is a mode of treatment of certain materials to produce a given result. It is an act, or a series of acts, performed upon the subject-matter to be transformed and reduced to a different state or thing.... The process requires that certain things should be done with certain substances, and in a certain order; but the tools to be used in doing this may be of secondary consequence."). See also *Alappat*, 33 F.3d at 1543, 31 USPQ2d at 1556-57 (quoting *Diamond v. Diehr*, 450 U.S. at 192,

209 USPQ at 10). See also *id.* at 1569, 31 USPQ2d at 1578-79 (Newman, J., concurring) (“unpatentability of the principle does not defeat patentability of its practical applications”) (citing *O'Reilly v. Morse*, 56 U.S. (15 How.) at 114-19). If a physical transformation occurs outside the computer, a disclosure that permits a skilled artisan to practice the claimed invention, i.e., to put it to a practical use, is sufficient. On the other hand, it is necessary for the claimed invention taken as a whole to produce a practical application if there is only a transformation of signals or data inside a computer or if a process merely manipulates concepts or converts one set of numbers into another.

12. The claims merely recite an abstract mathematical algorithm or disembodied program steps. The claims are not concrete and tangible.

Claim Objections

13. The word “die” (“die method”) in claim 1 should be replaced with “the”.

14. Claims 34, 42-44 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. The dependent claims 42-44 attempt to change the statutory class. It appear said claims should be rewritten in independent form. The claim does not appear to be in standard US format.

15. It also appears that claim 34 should be rewritten in independent form.

16. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The dependent claim also completely changes the scope of the claimed invention.

Claim Rejections - 35 USC § 112

17. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

18. Claims 25, 30, 33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- claim 25 recites "...of attributes at least attributes..."
- claim 30 recites "...determining a beating...". Should this be "a bearing"?
- claims 19, 33 recite determining an angular dependency". The meaning of angular dependency is indeterminate in the context of the claim.

Double Patenting

19. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

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20. A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

21. Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

22. Claims 1-48 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-40 of copending Application No. 10/237,178. Although the conflicting claims are not identical, they are not patentably distinct from each other because they are both directed to simulation of pedestrian behavior and appear to be claiming the same pedestrian model.

23. This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

24. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

25. Claims 1-4, 6-9, 11-33, 35-44, 47-48 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Helbing et al. (of record).

26. Helbing et al. discloses:

1. A method of simulating movement of an autonomous entity through an environment, the method comprising: providing a provisional path through a model of the environment from a current location to an intended destination (section III, especially par. 1-2); providing a profile for said autonomous entity (section III, table 1, eqns. 3-8, 13); determining a preferred step towards said intended destination based upon said profile and said provisional path, wherein determining said preferred step comprises determining a first dissatisfaction function for expressing a cost of taking a step comprising a sum of an inconvenience function for expressing a cost of deviating from a given direction and a frustration function for expressing a cost of deviating from a given speed (section III, equation 10, table 1, eqns. 3-8, 13); determining a personal space around said autonomous entity (section III, table 1, eqns. 3-8, 13); determining whether said preferred step is feasible by considering whether obstructions infringe said personal space (section III, eqns. 1, 3, 5-8, 13).

2. A method according to claim 1, wherein if the preferred step is not feasible, then the method further comprises: determining a region in which to seek a compromise step and determining whether at least one compromise step is feasible (section III, eqn. 10).

3. A method according to claim 1, comprising choosing one of a plurality of compromise steps (section III, eqn. 10).

4. A method according to claim 1, wherein determining said region includes adapting step parameters for determining said region in dependence upon at least one locally perceivable condition (section III, eqn. 1-2).

6. A method according to claim 1, wherein the determining of said personal space comprises defining a region in which absence of obstructions is sought (section III, eqns. 3, 5-8, 13).

7. A method according to claim 1, wherein obstructions include other autonomous entities (section III, eqns. 3, 5-8, 13).

8. A method according to claim 1, wherein obstructions include fixed obstructions (section III, eqns. 3, 5-8, 13).

9. A method according to claim 1, comprising determining the inconvenience function for expressing a cost of deviating from a given direction (section III, eqn. 10).

11. A method according to claim 9, wherein the determining of the inconvenience function includes: determining an acceleration associated with a change in velocity (eqns. 2, 10-12) between said step and a previous step and determining a third amount of work required to produce said acceleration (section III, equation 10, eqns. 2, 10-12).

12. A method according to claim 11, wherein the determining of the

inconvenience function includes summing said second and third amounts of work (section III, equation 10).

13. A method according to claim 1, comprising determining the frustration function (section III).

14. A method according to claim 13, wherein the profile includes a preferred walking speed and the determining of the frustration function comprises (table 1, eqns. 3-8, 13): determining a preferred instantaneous walking speed by adding said preferred walking speed to walking speed noise (section III, eqn. 10); determining a fourth amount of work dependent upon a difference between the walking speed and the preferred instantaneous walking speed (section III, equation 10).

15. A method according to claim 1, wherein the determining of said preferred step comprises: minimising said first dissatisfaction in respect of step length (section III, eqn. 10); minimising said first dissatisfaction in respect of step orientation (section III, eqn. 10); thereby to obtain a preferred step length and a preferred step orientation (section III, equation 10).

16. A method according to claim 1, wherein the determining whether said preferred step is feasible comprises determining a discomfort function for expressing a cost arising from the entity having to keep a distance which is less than a preferred distance from an obstruction (section III, eqns. 3, 5-8, 10, 13).

17. A method according to claim 1, comprising providing a preferred clearance tolerance for said entity (section III, eqn. 1-3); and determining a personal space around said entity in dependence upon said clearance tolerance (section III, eqns. 3, 5-8, 13).

18. A method according to claim 17, comprising: determining a density of neighbouring entities and determining said personal space around said entity in dependence upon said clearance tolerance and said density of neighbouring entities (section III, Table 1 section III, eqn. 10).

19. A method according to claim 17, comprising: providing information relating to velocity of said entity (section III, eqns. 2, 10-12); and determining an angular dependency (eqns 1, 4, 7, 10) for said personal space in dependence upon said velocity (section III, eqns. 2, 10-12).

20. A method according to claim 1, wherein said considering whether obstructions infringe said personal space comprises:

determining whether said personal space is infringed at a first position along said preferred step and determining whether said personal space is infringed at a second position along said preferred step (section III, eqns. 3, 5-8, 13).

21. A method according to claim 20, wherein said considering whether obstructions infringe said personal space further comprises:

determining whether said personal space is infringed at a third position along said preferred step (section III, eqns. 3, 5-8, 13).

22. A method according to claim 1, wherein if the preferred step is not feasible, then the method further comprises: determining a region in which to seek a compromise step (section III).

23. A method according to claim 22, wherein the determining of said region comprises defining an arc (section III).

24. A method according to claim 1, further comprising: determining a set of attributes for said autonomous entity in dependence upon said profile (section III, table 1, eqns. 3-8, 13).

25. A method according to claim 24, wherein the determining of said set of attributes at least attributes comprises: determining at least one attribute at time of generating said entity (section III, table 1, eqns. 3-8, 13).

26. A method according to claim 24, further comprising: modifying at least one attribute of said set of attributes for said autonomous entity (section III, table 1, eqns. 3-8, 13).

27. A method according to claim 1, wherein providing said profile for said autonomous entity comprises: basing said profile on a set of measured attributes (section III, table 1, eqns. 3-8, 13).

28. A method according to claim 1, wherein providing said profile for said autonomous entity comprises: statistically assigning said profile (section III, Table 1, section IV, table 1, eqns. 3-8, 13).

29. A method according to claim 1, wherein providing said profile for said autonomous entity comprises: providing said profile in dependence upon at least one aspect of said environment (section III, table 1, eqns. 3-8, 13).

30. A method according to claim 1, wherein providing said provisional path through said model of the environment from said current location to said intended destination comprises: determining a beating from said current location to said intended destination (section III, eqn. 1).

31. A method according to claim 1, further comprising: providing a preferred clearance tolerance for said entity (section III); and determining said personal space around said entity in dependence upon said clearance tolerance (section III, table 1, 3-8, 13).

32. A method according to claim 31, comprising: determining a density of neighbouring entities and determining said personal space around said entity in dependence upon said clearance tolerance said density of neighbouring entities (section III, table 1, eqns. 3-8, 13).

33. A method according to claim 31, comprising: providing information relating to velocity of said entity, (section III, eqns. 2, 10-12); and determining an angular dependency (eqns 1, 4, 7, 10) for said personal space in dependence upon said velocity (section III, eqns. 2, 10-12).

35. A method according to claim 1, comprising: determining said step

towards said intended destination while minimising deviation from a preferred speed (section III, (eqns 1, 4, 7, 10)).

36. A method according to claim 1, comprising: selecting said step towards said intended destination while maintaining at least a minimum distance from obstacles (section III, eqns. 1, 3, 5-8, 13).

37. A method according to claim 1, comprising: defining a neighbourhood; scanning said neighbourhood for obstacles (section III, eqns. 3, 5-8, 13); determining at least one condition relating to said obstacles and defining an area in which to seek a step towards said destination in dependence upon said at least one condition (section III, eqns. 3, 5-8, 13).

38. A method of simulating movement of an autonomous entity through an environment from a current location to an intended destination, the method comprising:

providing a provisional path through a model of the environment from a current location to an intended destination (section III, eqn. 1);

providing a profile for said autonomous entity (section III, table 1, eqns. 3-8, 13);

determining a preferred step towards said intended destination based upon said profile and said provisional path (section III, table 1, eqns. 1, 3-8, 13);

determining a personal space around said autonomous entity (section III, table 1, eqn. 3-8, 13);

determining whether said preferred step is feasible by considering whether obstructions infringe said personal space (section III, table 1, eqns. 3-8, 13) and,

if said preferred step is not feasible determining a compromise step (section III),

wherein determining a compromise step includes: defining a neighbourhood (section III, table 1, eqns. 3-8, 13); scanning said neighbourhood for obstacles (section III, eqns. 3, 5-8, 13);

determining at least one condition relating to said obstacles and defining an area in which to seek a step towards said destination in dependence upon said at least one condition (section III, eqns. 3, 5-8, 13).

39. A method according to claim 37, wherein determining said at least one condition relating to said obstacles comprises: determining a density of one type of obstacle (section III, eqns. 3, 5-8, 13).

40. A method according to any one of claims 37, wherein defining said area in which to seek a step towards said destination comprises: establishing an angular range for a search (section III, eqns 1, 4, 7, 10).

41. A method according to claim 37, wherein defining said area in which to seek a step towards said destination comprises: determining to which side of a preferred direction to search (section III, eqn. 4).

42. A computer program for performing the method according to claim 1 (section III, IV).

43. A computer-readable medium storing the computer program of claim 42 (section III, IV).

44. Apparatus configured to perform the method according to claim 1 (section III, IV).

47. Apparatus for simulating movement of an autonomous entity through an environment, the apparatus comprising: an interface for providing a provisional path through a model of the environment from a current location to an intended destination (section III, par. 1-2); an interface for providing a profile for said autonomous entity (section III, table 1, eqns. 3-8, 13); a processor for determining a preferred step towards said intended destination based upon said profile and said provisional path (section III, table 1, eqns. 1, 3-8, 13), wherein said processor is configured to determine a first dissatisfaction function for expressing a cost of taking a step comprising a sum of an inconvenience function for expressing a cost of deviating from a given direction and a frustration function for expressing a cost of deviating from a given speed (section III, eqn. 10); a processor for determining a personal space around said autonomous entity (section III); a processor for determining whether said preferred step is feasible by considering whether obstructions infringe said personal space (section III, eqns. 3, 5-8, 13).

48. Apparatus for simulating movement of an autonomous entity through an environment, the apparatus comprising: an interface for providing a provisional path through a model of the environment from a current location to an intended destination (section III); an interface for

providing a profile for said autonomous entity (section III, table 1, eqns. 3-8, 13); a processor for determining a preferred step towards said intended destination based upon said profile and said provisional path (section III, table 1, eqns. 1, 3-8, 13); a processor for determining a personal space around said autonomous entity (section III, 1, eqns. 3-8, 13); a processor for determining whether said preferred step is feasible by considering whether obstructions infringe said personal space (section III, eqns. 1, 3, 5-8, 13) and, if said preferred step is not feasible, for determining a compromise step, wherein said processor is configured define a neighbourhood, scan said neighbourhood for obstacles, determine at least one condition relating to said obstacles (section III, eqns. 3, 5-8, 10, 13); and define an area in which to seek a step towards said destination in dependence upon said at least one condition (section III, eqns. 3-8, 10, 13).

Claim Rejections - 35 USC § 103

27. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

28. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.

3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
29. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hebling in view of Smith.
30. Helbing et al. (H) disclose all limitations as discussed, but do not appear to disclose using the results of the simulation during building planning.
31. Smith (S) discloses such a teaching.
32. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the Helbing disclosure with the Smith teaching because Smith discloses the use of algorithm in sections 3-4 relating to pedestrian simulation for designing evacuation routes in buildings. Carrying out such simulation, to be used in the building design, would save lives.
33. Specifically Helbing in view of Smith discloses:
34. A method of designing a building structure, the method comprising: providing a model of said building structure; simulating movement of at least one entity through said building structure, according to claim 1; and revising said model of said building structure in dependence upon movement of said at least one entity (section 3-4).

Allowable Subject Matter

34. Claims 45-46 are allowable (and will be allowed once all outstanding rejections are traversed) over the prior art of record. These claims are in a "means for" format. The material as recited on page 18, line 8 to page 23, line 20, for example, are considered

novel and non-obvious over the prior art of record. While the generalities of pedestrian simulation are well established in the art, the detailed specifics as disclosed in said section are novel and non-obvious.

35. Non "means for" claims reciting sufficient specifics as disclosed in such sections will be considered novel and non-obvious as well.

Claims 5, 10 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The novel, non-obvious features are highlighted:

5. A method according to claim 1, wherein determining said region includes adapting step parameters for determining said region in dependence upon memory of past conditions.

10. A method according to claim 9, wherein the provisional path includes a direction from said current location to said intended destination and the profile includes a preferred step length, and wherein the determining of the inconvenience function includes: determining a first amount of work required to take a step of given step length; determining a second amount of work which is a **proportion** of said first amount of work corresponding to a component which is not directed in said optimal direction.

Conclusion

36. The Hosoi reference (of record) is also considered 102(b) anticipatory art, but is not applied because it is cumulative to the applied reference.

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37. Any inquiry concerning this communication or earlier communications from the examiner should be:

directed to: Dr. Hugh Jones telephone number (571) 272-3781,

Monday-Thursday 0830 to 0700 ET,

or

the examiner's supervisor, Kamini Shah, telephone number (571) 272-2279.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist, telephone number (703) 305-3900.

mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 308-9051 (for formal communications intended for entry)

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